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WHITE PINE BLISTER RUST IN THE NORTHWEST



WHAT IT IS

White Pine Blister Rust is a destructive fungous disease which spreads on currant and gooseberry plants and then attacks and kills white pines. The western white pine (Idaho white pine) and the sugar pine (California sugar pine) are subject to its attack. The near approach of this disease now threatens valuable forests of these timber trees with destruction.

Blister rust was unknowingly brought from Europe into the eastern United States about twenty-five years ago, on trees imported for forest and ornamental planting, and since then has established itself in the eastern white pine forests and has caused severe losses in stands which have not been protected by local eradication of currants and gooseberries. It was probably introduced into western North America on young white pines imported directly from France and planted at Vancouver, B.C. in 1910, but was not discovered until 1921.

HOW IT SPREADS

Blister rust spends part of its life on white pines and part on currants and gooseberries. This disease does not attack any other trees or shrubs. It appears on the bark of white pine trees two or three years after infection takes place. The bark becomes swollen, and in the spring, small whitish sacs push their way to the surface. These break and liberate millions of very small, seed-like bodies known as spores. These spores, as they are blown about by the wind, cannot infect other pine trees, but do cause an orange-yellow rust to form on the lower leaf-surfaces of currant and gooseberry plants. There, another type of spore is formed in early summer which spreads the rust to other currant and gooseberry leaves. In the autumn, small brown hair-like bodies are formed on the diseased leaves and give rise to spores that infect white pines. On the pines, the

disease lives in the bark, and kills the tree by girdling it or by killing all of its branches.

VALUES AT STAKE

The present stand of commercial five-needle pines in the United States is 78,571 million board feet. Approximately three-fourths of this timber, 57,071 million board feet, is in the western forests. The two important commercial species in the West are western white pine and sugar pine. In Idaho, from 1914 to 1918, more than one-third of the lumber produced was western white pine, and in California during the same period one-tenth of the lumber produced was sugar pine. The lumber manufactured from these pines is more valuable than that of other species; therefore these proportions are greater in dollar value than in board feet.

The blister rust is already firmly established in British Columbia and has spread into northern and western Washington. The continued spread of this disease may eliminate our white and sugar pine crops of the future unless we are successful in controlling it. The loss of this timber would be felt by everyone in the West, whether or not he owns timber, because many articles of common daily use, such as matches, doors, window frames, mouldings, and many parts of farm machinery are better made from white pine than from any other lumber. Large numbers of wage earners are sustained by these industries.

COMBATIVE MEASURES

The United States Department of Agriculture, in co-operation with western State officials and others interested in the preservation of white pine, is endeavoring to delay the spread of this disease and assure its control. Extensive experimental work is now under way to improve methods of removing wild currant and gooseberry bushes from white pine woods, for the purpose of protecting white pine timber and young growth. Also, a general cooperative pro-

gram of eradication of cultivated black currants is being conducted in the pine-growing states.

The process of freeing white pine forest areas from currants and gooseberries is called "local control". It is based on the fact that the disease cannot spread from pine to pine, but must pass from pine to currant or gooseberry and thence to adjacent white pines. The blister rust spores that infect the pines are very delicate and short-lived, so that removal of currant and gooseberry bushes within a short radius of the pine gives effective protection from the rust. However, it must be clearly understood that while the pine-infecting spores produced on currants and gooseberries are short-lived, the spores that carry the disease from pines to currants are long-lived and can infect cultivated black currant plants many miles away. Instances are known in which cultivated black currants have been infected with the rust upwards of 100 miles from the nearest infected pines. It is highly important to prevent these long jumps of the disease and thus afford time to apply local control in white pine forests before the disease reaches them. The timber area needing local protection from the rust is so large that the work can be done only if the advance of the disease is delayed as much as possible. Practicable means exist to hold the disease to a slow rate of spread.

DELAYING THE SPREAD OF THE RUST

(A) By eradication of cultivated black currants.

Cultivated black currants, sometimes called the European or English black currants, or bed-bug currants, are more susceptible to white-pine blister rust than any other type of currant or gooseberry. This species is the chief factor in the long-distance spread and establishment of white pine blister rust because these plants become heavily infected with the rust at great distances from diseased pines, and thus establish new centers of infection from which the disease spreads rapidly to other kinds of currants and gooseberries and white pines. Compared to cultivated

black currants, other species of currants and gooseberries are relatively resistant to blister rust. However, in the course of a season the disease may spread to any type of currant or gooseberry from the original black currant center, because of successive cycles of the summer stage of the rust.

The United States Department of Agriculture regards the cultivated black currant as a distinct menace to the white pine timber supply of the country. It is a menace not only to the thousands of farm owners who grow white pine in their wood-lots or in their shelter belts and dooryards, but also to all citizens, since all use white pine lumber directly or indirectly. The common cultivated black currant is so serious a danger to the production of white pine timber as to make this currant a public nuisance in all states where white (five-needled) pines grow. Because of these facts the United States Department of Agriculture is opposed to the growing of this species of currant (*Ribes nigrum*) anywhere in the United States and recommends that State authorities, nurserymen, and growers take active steps to accomplish its elimination from the western states. The growing of cultivated black currants, in home gardens as well as in nurseries and commercial plantings, should be entirely abandoned throughout pine-growing states, because of the great importance of the white pines, and the relatively small value of the black currants.

There are some individuals to whom the loss of cultivated black currants will mean a real sacrifice. But the menace of the blister rust to our white pine forests should make even those who like black currants willing to make this sacrifice, since the spread of the rust cannot be checked in any other way.

(B) By preventing unlawful movement of blister rust host plants.

Quarantine laws have been enacted by the Federal Government and the several cooperating states which are designed to prevent the spread of blister rust by shipment

of diseased plants. These quarantines prohibit (1) the movement of all white pines, currants and gooseberries into the United States from Canada, Newfoundland, Europe, and Asia; (2) the shipment of these plants into the West from all states east of and including Minnesota, Iowa, Missouri, Arkansas, and Louisiana; and (3) their shipment out of the state of Washington.

HOW YOU CAN HELP

Everyone in the West can and should help in fighting the blister rust. You can help in the following ways:

1. By destroying any cultivated black currants which you may have in your gardens.
2. By obeying the quarantine laws listed above.
3. By interesting your neighbors in the efforts to control blister rust.
4. By watching for the disease, as described here, on currants, gooseberries, or white pines. If anything suspicious is found, send it to the State Agricultural College, or to the United States Department of Agriculture, Office of Blister Rust Control, 618 Realty Building, Spokane, Washington. For additional information apply to the above-named cooperators or to the State Department of Agriculture.

